REMARKS

Claims 2, 7, 8, 13 and 15 are amended herewith. No new matter is added. Claim 9 is cancelled. Claims 2-8, 13 and 15 are pending and under consideration.

CLAIM REJECTIONS UNDER 35 USC §103

Claims 2, 5-9, 13 and 15 are rejected under 35 USC §103(a) as being unpatentable over Fludger (U.S. Patent Publication No. 2003/0081307) in view of Bolshtyansky (U.S. Patent No. 6,456,426).

Independent claim 2 is amended herewith to specify that the modulator unit modulates

> the pump light of the first- and second-order pumps by using a first timing for the pump light of the first-order pumps and a second timing relatively different from the first timing for the pump light of the at least one second-order pump to allow flattening lateral signal power distribution along the optical fiber.

The claim amendments are fully supported by the originally field specification, for example, page 10, lines 17-20, page 11, lines 4-11, and FIG. 8.

Claims 7 and 8 are amended to correspond to amended claim 2.

Fludger and Bolshtyansky alone or in combination do not teach or suggest at least "a modulator unit modulating the pump light of the first- and second-order pumps by using a first timing for the pump light of the first-order pumps and a second timing relatively different from the first timing for the pump light of the at least one second-order pump" as recited in amended claim 2. Although, Fludger suggests the possibility of using second order pump lights in paragraph [0027], none of the embodiments described in Fludger actually uses any second order pump light and different timing, for example, for the five first order pump lights illustrated in FIG. 1 therein. Therefore, Fludger's suggestion is not an enabling basis for combining with Bolshtyansky's teachings. Bolshtyanski uses only first order pumps timed to transfer their power at different positions in an optical fiber. However, Bolshtyanski does not teach the "modulator unit modulating the pump light of the first- and second-order pumps by using **a first timing for the pump light of the first-order pumps and a second timing relatively different from the first timing for the pump light of the at least one second-order pump**" (emphasis ours).

Additionally, the Office Action does not provide a viable reason for combining the teachings of Fludger and Bolshtyansky. The outstanding Office Action states "It would have been

obvious to one of ordinary skill in the art (e.g. an optical engineer) at the time the invention was made to modulate pumps for the advantage of reducing detrimental effects of cross-pump pumping, as is specifically taught by Bolshtyansky." However, the modulator of claim 1 does not modulate the pump light of the first- and second-order pumps at different timings to "reduce detrimental effects of cross-pump pumping" but as stated in the claim "to allow flattening lateral signal power distribution along the optical fiber." This goal is not achieved by either Fludger or Bolshtyansky.

In *KSR Corp. v. Teleflex Inc.* (2007), the Supreme Court maintained that the analysis supporting a rejection under 35 U.S.C. 103(a) should be made explicit, and that it was "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed.[1] An optical engineer would not modulate the pump light of the first- and second-order pumps at different timings to "reduce detrimental effects of cross-pump pumping", since these effects occur when the wavelengths are relatively close as for multiple first-order lights and not when the wavelengths are substantially different as between first-order and second-order lights.

Therefore, claim 2 and claims 3-8 depending directly from claim 2 patentably distinguish over cited prior art.

Amended independent claim 13 patentably distinguishes over the cited prior art at least by reciting

> modulating the pump light of the first- and second-order Raman pumps by using a first timing for the pump light of the first-order pumps and a second timing different from the first timing for the light pumped of the at least one second-order pump to allow flattening lateral signal power distribution along the optical fiber.

Amended independent claim 15 (claim 15's amendment is supported, for example, by page 19 lines 9-16 of the specification) patentably distinguishes over the cited prior art at least by reciting

> emitting pump light of a plurality of first-order Raman pumps and at least one second-order Raman pump, first-order pump lights having different time offset between the pump light of the first-order Raman pump and the pump light of the at least one second-order Raman pump, and different launching powers correlated to

---

[1] Often, it will be necessary . . . to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. KSR, slip op. at 14.

equalize a gain induced by the plurality of first order pumps along the fiber.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: Nov. 14, 2007

By: _____

Luminita A. Todor
Registration No. 57,639

1201 New York Ave, N.W., 7th Floor
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501